DOCUMENTATION

Only those supplier documents should be specified which are necessary and sufficient to provide:

1. Information needed for design of interface facilities, e.g., equipment foundations and loads; outline dimensions; electrical wiring information; interconnecting piping;

2. Assurance that equipment is capable of fulfilling its function and that documents conform to specification requirements.

3. Degree of control of the supplier's work processes, e.g., welding , heat treatment, NDE, material test, and performance test results and reports;

4. Information on painting, packaging, handling, storage, shipping, cleaning, installation, maintenance, and operability requirements necessary for construction.

5. Information on spare parts requirements.

The specification is to identify the following document categories:

1. Documents required for review prior to contract award.

2. Documents required for review/acceptance after contract award prior to the start of any activities.

3. Documents required for review/acceptance after start of activities prior to shipment.

4. Documents required which will be included with shipment.

Listed below are engineering document categories for consideration during the development of the specification:

Engineering Documents: This term comprises procedures, drawings, specifications, prototype qualification test reports, and other similar documents that require SAIC's permission to proceed prior to fabrication, or prior to use of the document on the design, fabrication, installation, or other work progress. The term is also applied to instructions for erection/installation, operation, maintenance, and site storage and handling.

1.0 DRAWINGS

(a) Outline Dimensions, Services, Foundations and Mounting Details – Drawings providing external envelope, including lugs, centerline(s), location and size for electrical cable, conduit, fluid, and other service connections, isometrics and details related to foundations and mountings.

(b) Assembly Drawings – Detailed drawings indicating sufficient information to facilitate assembly of the component parts of an equipment item.

(c) Shop Detail Drawings – Drawings that provide sufficient detail to facilitate fabrication, manufacture, or installation. This includes pipe spool drawings, internal piping and wiring details, cross-section details and structural and architectural details.

(d) Wiring Diagrams – Drawings which show schematic diagrams, equipment internal wiring diagrams, and interconnection wiring diagrams for electrical items.

(e) Control Logic Diagrams – Drawings that show paths that input signals must follow to accomplish the required responses.

(f) Piping and Instrumentation Diagrams – Drawings which show piping system scheme and control elements.

2.0 PARTS LIST AND COST- Sectional view with identified parts and recommended spare parts for one year's operation or specified with unit cost.

3.0 INSTRUCTIONS

(a) Erection/Installation – Detailed written procedures, instructions, and drawings required to or install material or equipment.

(b) Operating – Detailed written instructions describing how an item or system should be operated.

(c) Maintenance – Detailed written instructions required to disassemble, reassemble and maintain items or systems in a satisfactory operating condition.

(d) Site Storage and Handling – Detailed written instructions which define the requirements and time period for lubrication, rotation, heating, lifting or other handling requirements to prevent damage or deterioration during storage and handling at jobsite. This includes return shipping instructions.

4.0 SCHEDULES – ENGINEERING AND FABRICATION/ERECTION - Bar charts or critical path method diagrams which detail the chronological sequence of activities.

5.0 QUALITY ASSURANCE MANUAL/PROCEDURES- The docunment(s) which describe(s) the planned and systematic measures that are used to assure that structures, systems, and components will meet the requirements of the procurement documents.

6.0 ANALYSIS AND DESIGN REPORT – The analytical data (stress, electrical loading, fluid dynamics, etc.) which demonstrates that an item satisfies specified requirements.

7.0 ACOUSTIC DATA REPORT – The noise, sound and other acoustic vibration data required by the procurement document.

8.0 SAMPLES – Typical Material Used – A representative example of the material to be used.

9.0 MATERIALS DESCRIPTION – The technical data describing a material which a supplier proposes to use. This usually applies to architectural items, e.g., metal siding, decking, doors, paints, coatings.

10.0 WELDING PROCEDURES AND QUALIFICATIONS – The welding procedure, specification and supporting qualification records required for welding, hard facing, overlay, brazing and soldering.

11.0 MATERIAL CONTROL PROCEDURES – The procedures for controlling issuance, handling, storage and traceability of materials such as weld rod

12.0 REPAIR PROCEDURES – The procedures for controlling material removal and replacement by welding, brazing, etc., subsequent thermal treatments, and final acceptance inspection.

13.0 CLEANING AND COATING PROCEDURES – The procedures for removal of dirt, grease or other surface contamination and preparation and application of protective coatings.

14.0 HEAT TREATMENT PROCEDURES – The procedures for controlling temperature and time at temperature as a function of thickness, furnace atmosphere, cooling rate and method, etc.

15.0 UT – ULTRASONIC EXAMINATION PROCEDURES – Procedures for detection of presence and certain characteristics of discontinuities and inclusions in materials by the use of high frequency acoustic energy.

16.0 RT – RADIOGRAPHIC EXAMINATION PROCEDURES – Procedures for detection of presence and certain characteristics of discontinuities and inclusions in materials by x-ray or gamma ray exposure of photographic film.

17.0 MT – MAGNETIC PARTICLE EXAMINATION PROCEDURES – Procedures for detection of surface (or near surface) discontinuities in magnetic materials by distortion of an applied magnetic field.

18.0 PT – LIQUID PENETRANT EXAMINATION PROCEDURES – Procedures for detection of surface discontinuities in materials by application of a penetrating liquid in conjunction with suitable developing techniques.

19.0 EDDY CURRENT EXAMINATION PROCEDURES – Procedures for detection of discontinuities in material by distortion of an applied electromagnetic field.

20.0 PRESSURE TEST – HYDRO, AIR, LEAK, BUBBLE OR VACUUM TEST PROCEDURES – Procedures for performing hydrostatic or pneumatic structural integrity and leakage tests.

21.0 INSPECTION PROCEDURE – Organized process followed for the purpose of determining that specified requirements (dimensions, properties, performance results, etc.) are met.

22.0 PERFORMANCE TEST PROCEDURES – Tests performed to demonstrate that functional design and operational parameters are met. For example:

22.1 Mechanical Tests – e.g., pump performance data, valve stroking, load, temperature rise, calibration, environmental, etc.

22.2 Electrical Tests – e.g., impulse, overload, continuity, voltage, impedance, amperage, temperature rise, calibration, saturation, loss, etc.

23.0 PROTOTYPE TEST REPORT – Report of a test that is performed on a standard or typical example of equipment or items, and is not required for each item produced in order to substantiate the acceptability of equal items. This may include tests that result in damage to the item(s) tested.

24.0 PERSONNEL QUALIFICATION PROCEDURES – Procedures for qualifying welders, inspectors and other special process personnel.

25.0 SUPPLIER SHIPPING PREPARATION PROCEDURE – The procedure used by a supplier to prepare finished materials or equipment for shipment from its facility to the jobsite.

Listed below are quality verification document categories for consideration during the development of the specification:

Quality Verification Documents. This term comprises material test reports, heat treatment charts, welding records, NDE results, performance test reports, and similar document(s), which demonstrate or verify conformance to the technical or inspection requirements of the procurement documents.

1.0 WELDING AND QUALIFICATION VERIFICATION REPORTS – A verification report of welds performed including the identification of the qualified weld(s), and certification that the weld(s) were qualified.

2.0 MATERIAL VERIFICATION REPORTS – Reports relative to material which confirm, substantiate or assure that an activity or condition has been implemented in conformance with code and material specifications imposed by the procurement documents.

3.0 MAJOR REPAIR VERIFICATION REPORTS – Verification reports may include weld repair locations (maps), material test reports for filler metal, pre- and post-weld treatment records, NDE records, etc.

4.0 CLEANING AND COATING VERIFICATION REPORTS – Verification reports include certification of visual examination for surface preparation, surface profile, materials, etc., humidity data, temperature data and coating thickness data as required by the procurement documents.

5.0 HEAT TREATMENT REPORTS – Verification reports normally include furnace charts or similar records which identify and certify the item(s) treated, the procedure used, furnace atmosphere, time at temperature, cooling rate, etc.

6.0 MATERIAL PROPERTY REPORTS

6.1 Material Test Reports (MTR) – These reports include all chemical, physical, mechanical, and electrical property test data required by the material specification and applicable codes. This is applicable to cement, concrete, metals, cable jacket materials, rebar, rebar splices, etc.

6.2 Impact Test Data – Results of Charpy or drop weight tests including specimen configuration, test temperature and fracture data.

6.3 Ferrite Data – Report of the ferrite percentage for stainless steel materials used, including castings and welding filler metals as deposited.

6.4 Material Certificate of Compliance – Verification document which certifies conformance to the requirements of the applicable material specification.

6.5 Electrical Property Reports – Report of electrical characteristics, e.g., dielectric, impedance, resistance, flame tests, corona, etc.

7.0 CODE COMPLIANCE – Verifying documents (such as data Forms U-1, N-2, State, etc.), which are prepared by the manufacturer or installer and certified by the Authorized Code Inspector.

8.0 UT – ULTRASONIC EXAMINATION AND VERIFICATION REPORTS – Examination results of presence and certain characteristics of discontinuities and inclusions in material by the use of high frequency acoustic energy.

9.0 RT – RADIOGRAPHIC EXAMINATION AND VERIFICATION REPORTS – Examination results of presence and certain characteristics of discontinuities and inclusions in materials by x-ray or gamma ray exposure of photographic film.

10.0 MT – MAGNETIC PARTICLE EXAMINATION AND VERIFICATION REPORTS – Examination results of surface (or near surface) discontinuities in magnetic materials by distortion of an applied magnetic field.

11.0 PT – LIQUID PENETRANT EXAMINATION AND VERIFICATION REPORTS – Examination results of surface discontinuities in materials by application of a penetrating liquid in conjunction with suitable developing techniques.

12.0 EDDY CURRENT EXAMINATION AND VERIFICATION REPORTS – Examination results of discontinuities in material by distortion of an applied electromagnetic field.

13.0 PRESSURE TEST – HYDRO, AIR, LEAK, BUBBLE OR VACUUM TEST AND VERIFICATION REPORTS – Results of hydrostatic or pneumatic structural integrity and leakage tests.

14.0 INSPECTION AND VERIFICATION REPORTS – Documented findings resulting from an inspection.

15.0 PERFORMANCE TEST AND VERIFICATION REPORTS – Report of test results.

15.1 Mechanical Tests, e.g., pump, performance data, valve stroking, load, temperature rise, calibration, environment, etc.

15.2 Electrical Tests, e.g., load, impulse, overload, continuity, voltage, impedance, amperage, temperature rise, calibration, saturation, loss, etc.

16.0 PROTOTYPE TEST REPORT – Report of the test that is performed on a standard or typical example of equipment, material or item, and is not required for each item produced in order to substantiate the acceptability of equal items. This normally includes tests that may, or could be expected to, result in damage to the item(s) tested.